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ABSTRACT

The food frequency, meal frequency, and meal patterns of a group of Mexican American children attending Head Start in East Los Angeles and their siblings were studied. Fifty dietary questionnaires in English and in Spanish with written instructions were distributed to parents. Parents were asked to record for a 3 day period the eating time, type and amount of food eaten, how food had been prepared, and how the child accepted the food, as well as the usual frequency that he ate various foods. For this study, 25 of the diet records and 23 of the questionnaires were useable. The 25 diet records were examined using the 4 basic food groups. This paper discusses (1) the number of servings for all food groups consumed by the children, (2) the number of servings per day of the 4 food groups, (3) how often various foods were eaten during the 3 days, (4) the mean frequency which mothers reported their children generally ate various foods, (5) mothers' estimates of snacks eaten by their children, (6) the types of snacks, (7) how often the children ate various snacks, (8) the number of times various meals contained the 4 food groups, (9) the meal patterns by food groups, and (10) the cooking method most frequently used. The diet records and questionnaires indicate that the childrens' intake of milk and meat are generally adequate but that the number of servings of fruits and vegetables are frequently inadequate. The findings are presented in 10 tables of data. (NQ)

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A Pilot Survey of Food Frequencies, Meal Frequencies and Meal Patterns of Preschool Children in East Los Angeles*

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Meal patterns and meal frequency are important in determining whether diets will be adequate. Without good meal patterns or without sufficient meals it is difficult for preschool children to obtain sufficient of each of the nutrients.

Because little has been published concerning food frequency, meal frequency, and meal patterns of Mexican American preschool children a group of children attending Head Start in East Los Angeles and their siblings were studied. The nutrient intake and biochemical data have been reported elsewhere previously.

Fifty dietary questionnaires in English and in Spanish with written directions were distributed to parents after verbal instructions had been given by the Head Start nutritionist who was a bilingual Mexican American. The parents were asked to record for a three day period the eating time, type and amount of food eaten, how the food had been prepared, and how the child accepted the food as well as the usual frequency that the child ate various foods. Personal visits and telephone calls by dietetic and nutrition students, a Mexican American public health student, and the Head Start nutritionist were used to encourage and assist the parents in completing the questionnaires.

Twenty-six questionnaires were partially or totally completed, 17 in English and nine in Spanish. Two mothers were illiterate in both English and Spanish.

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Twenty-five diet records and 23 questionnaires were useable for this study; four for children one to two years old, one for a two to three year old, two for three to four year olds, and 18 for four to six year olds.

The per capita income per week of the families participating in the study ranged from $8-22, with a mean of $13 and a median and mode of $12. Twenty per cent of the fathers were unemployed. The median size of the families was six members.

When the three day diet records for 25 children were examined by the four basic food groups it was found that seven children (28%) consumed the recommended number of servings for all four food groups. These are shown in Table 1. If two servings of milk and milk products were used as the standard 96% of the children met the standard and if three servings of milk and milk products were used as the criteria 80% met the criteria for adequacy. Of those that met the number of servings for three food groups eight of the ten children met the recommended number of servings for the milk, meat, and cereal groups, and the other two children met the recommended number of servings for the meat, milk and vegetable-fruit groups. Of those that met only two groups, four out of the five met them for the meat and milk groups. Of the children whose diets were recorded in Spanish one met the recommended number of servings for all four food groups, four met three groups, two met only two groups and one met only one group.

The mean number of servings per day of the four food groups eaten by these children are shown in Table 2. All but one child averaged two or more servings of milk and milk products and all but five (20%) had two servings from the meat group. Half of the children averaged four or more servings per day of the bread-cereal group and 16% had less than an average of three servings per day. Half of the children had a mean of less than three servings of the vegetable-fruit group for the three days of the diet record.

The frequency which various foods were eaten during the three days recorded are shown in Table 3. One third of the children did not have a single egg, two-fifths did not eat a serving of vitamin C rich food, and one half did not eat a vitamin A rich fruit or vegetable.

Ethnic foods, with the exception of beans and tortillas, were eaten very infrequently. Beans and tortillas were eaten frequently by a few but were not eaten at all by several children (one third). Four of the eight children whose diets were recorded in Spanish did not eat beans and four did not eat any tortillas during the three days diets were recorded.

Almost half of the children did not have an cokes or kool-ade type drinks recorded and 80% did not have candy recorded.

The mean frequency that mothers reported that their children generally ate various foods is summarized in Table 4. It should be noted that eggs were reported to be eaten very frequently. Beans were reported to be eaten less frequently than eggs. In the diet records eggs and beans were eaten about the same number of times. Citrus was indicated as being eaten frequently while in the diet records it did not appear as often. Also mothers believed their children ate fruits and vegetables more often than the breakdown of their diet records by food groups indicated.

All of the 25 children ate at least three meals regularly and snacks were included in the diet records for two thirds of the children. The mothers' estimates of how many snacks their children ate are shown in Table 5. The diet record indicated that eight children had no snacks. Six of these children had Spanish speaking mothers. The mothers' estimates indicated that five children never had snacks. According to the mothers' answers five children (23%) had six meals regularly counting snacks, two children (9%) had five meals and four children (18%) had four meals. In addition three children

frequently had six meals. Thus two thirds of the children had four or more meals regularly.

The types of snacks recorded in the diet records are listed in Table 6. Milk was the most frequent food mentioned as a snack. The milk group, the break-cereal groups, and the fruit-vegetable group appeared as snacks with about the same fequency. Candy and pop were eaten less frequently.

The frequencies that mothers said their children generally ate various snacks are listed in Table 7. Again milk was the food that was mentioned most often. When foods were grouped into the four food groups the bread-cereal group was the most frequently mentioned food group. The mothers overestimated slightly the frequency of the milk, the meat, and the bread-cereal groups, while the fruit-vegetable group appeared as snacks with about the same frequency as in diet records.

Table 8 show the number of times various meals contained the four food groups. This was about 13% of the meals.

Table 9 indicates the meal patterns by food groups. All the children drank milk at breakfast, all but three at their noon meal and all but five at their even meal. The most common breakfast pattern, representing half of the breakfasts was milk and cereal or bread or tortilla. In addition 27% of the breakfasts included eggs, milk and cereal and 4% of the breakfasts contained meat, milk and cereal-bread. The six breakfasts that contained all four food groups were consumed by three children whose mothers recorded in Spanish. Sixty-three of the 71 breakfasts all contained milk and cereal-bread.

The pattern that emerged from the records of the noon meals was that almost all children had milk and meat, nuts, or beans, and frequently they had some food from the cereal-bread group. Additional foods in the meal varied. Three children did not drink milk at noon but one of these had cheese. Two children did not have anything from the meat groups for the noon meal during

the three days recorded. These were children whose diets were recorded in Spanish. Three ate peanut butter at the noon meal and the remaining 19 had meat in some form or beans for their noon meal. Two children did not have any bread-cereal during the three days for the noon meal while seven had some food each day from the bread-cereal group at the noon meal. The rest had bread or cereal either once or twice during the three days recorded. The children who did not drink milk sometimes had a coke or kool-ade type drink with their noon meal. Nine children (36%) consistently had the fruit-vegetable group at noon while four (16%) did not have any fruits or vegetables in their noon meal in the three days recorded. The other twelve children (45%) had in their noon meal the vegetable-fruit group once or twice during the three days the intake was recorded.

The most common evening meal pattern included the meat, vegetable, and bread groups with meat, milk and bread second most common. Five children did not have anything from the meat group in the evening during the three days recorded. Three of these children had only milk and bread-cereal for their evening meal. These were all children whose diets were recorded in Spanish. Another child had milk and vegetable, his diet also being recorded in Spanish. A fifth child, whose diet was in Spanish had milk, vegetable and bread. Fourteen children (56%) had the fruit-vegetable groups consistently at their evening meal while nine (36%) did not have a single serving recorded from this group in their evening meals during the three days recorded. The other two children (8%) had at their evening meals one or two servings of fruits and vegetables during the three days recorded.

The replies to a question about the cooking method most frequently used are summed up in Table 10. Boiling or frying were the most common methods with baking second.

Examination of these children's diets indicate that consumption of the milk and meat groups is adequate which was also verified by calculation of the nutrient intake. This is contrary to some articles and texts. This points out the need for nutrition educators to make a pilot survey of food frequencies before they start a nutrition education project. It may well be that the foods suspected of being insufficient in the diet are not. The mothers should be encouraged to continue these good practices as the children grow older. However, it should not be assumed that milk is sufficient in all preschool Mexican American Children's diets. Acosta has found that half of the Mexican American preschool children studied in San Ysidro, Calif., a border town, had less than 11 ounces of milk per day.

Examination of the diet records by food groups shows that for this particular population consumption of vegetables and fruits, particularly vitamin C rich and vitamin A rich, was very poor for many. However, nutrient intake data indicated that vitamin A was adequate. The use of whole milk probably helped. Plasma ascorbic acid levels were satisfactory though nutrient intake data for vitamin C indicated that several children had low intakes. It is difficult to estimate the contribution of mixed dishes. Nutrition educators need to emphasize the many contributions of the dark green leafy and the yellow vegetables to the diet. Six food groups might better place the emphasis where it is needed, that is on vitamin C rich, and on green leafy vegetables, which are vitamin A, iron and folate rich.

In summary diet records and food frequency questionaires for this particular population of Mexican American preschool children indicate that the intake of milk and meat are generally adequate but that the number of servings of fruits and vegetables are frequently inadequate.

Table 1. Percentage of 25 Mexican American preschool children basic four food groups

	Number	Percentage
All four food groups	7	28
Three food groups	10	40
Two food groups	5	20
One food group	3	12
Milk (2-3 servings)	24	96*
Meat	22	88
Cereal	15	60
Vegetable-fruit	10	40

*If 3 servings used as criteria 80% children met criteria

Table 2. Mean number of servings per day of four food groups eaten by 25 Mexican American preschool children

Servings	Dairy		Meat		Cereal Bread		Vegetable Fruits	
	N	%	N	%	N	%	N	%
6	0	0	0	0	1	4	0	0
5.0-5.9	0	0	1	4	2	8	1	4
4.0-4.9	2	8	1	4	9	36	4	16
3.0-3.9	10	40	10	40	9	36	8	32
2.0-2.9	12	48	8	32	4	16	7	28
1.0-1.9	1	4	5	20	0	0	3	12
0.0-0.9	0	0	0	0	0	0	1	4
?	0	0	0	0	0	0	1	4

	Dairy Servings	Meat Group Servings	Cereal-bread Servings	veg.-fruit Servings
Mean	2.8	2.6	3.7	2.7
Median	2.6	2.6	3.6	3.0
Recommended	2-3	2	4	4

Table 3. Frequency children ate various foods in three days

	Times Eaten in Three Days					
	0	1	2	3	4	5
	Number of Children					
Eggs	8	5	4	5	1	0
Vitamin C rich	10	4	2	3	4	1
Vitamin A rich	12	7	3	3	0	0
Potatoes	2	5	4	4	0	0
Rice	12	7	5	2	0	0
Pasta	19	5	1	0	0	0
Soup	18	6	2	0	0	0
Beans	6	9	6	2	1	1
Tortillas	9	5	2	7	2	0
Sopa	20	2	3	0	0	0
Chili	23	2	0	0	0	0
Tamales	24	0	1	0	0	0
Enchiladas	24	1	0	0	0	0
Burritos	23	0	2	0	0	0
Carnitas	24	1	0	0	0	0
Caldo	24	0	1	0	0	0
Cokes, kool-ade	11	7	4	3	0	0
Candy	20	2	3	0	0	0

Table 4. Mean frequency mothers reported children ate foods

	Mean Servings Per Person Per Week	Mean Servings Per Person Per Day
Fluid milk	15.4	2.1
Cheese, puddings, ice cream	4.7	0.7
Breakfast meat	2.5	0.4
Lunch meat	4.7	0.7
Dinner meat	3.5	0.5
Eggs	5.8	0.8
Beans	3.0	0.4
Breakfast cereals	4.5	0.6
Bread, sweet rolls	20.3	2.9
Macaroni, spaghetti	4.0	0.6
Citrus fruit	8.1	1.1
Whole fruit	4.7	0.7
Potatoes	2.3	0.3
Cooked Vegetables	5.0	0.7
Raw vegetables	5.4	0.8

Table 5. Meal frequency of Mexican American preschool children

Diet Records			Frequency Questionaire		
Meals	Children		Meals	Children	
N	N	%	N	N	%
6	6	24	6	5	23
5 or 6	1	4	Frequently 6	3	14
5	3	12	Frequently 5	1	5
4 or 5	1	4	5	2	9
4	5	20	4	4	18
3 or 5	1	4	Occasionally 3 snacks	2	9
3	8	32	3	5	23

Table 6. Foods recorded in diet records as snacks for 25 Mexican American preschool children

	Mean Servings Per Day per child
Milk products	0.5
Bread-cereal	0.5
Fruit-vegetable	0.6
Meat	0.1
Candy, cake, jello, pop	0.2
Total	1.9

Table 7. Foods reported by mothers eaten as snacks by 23 Mexican American preschool children

	Mean Servings Per Day per child
Milk and milk products	1.0
Bread-cereal group	0.8
Fruit juice	0.5
Meat group	0.3
Potato chips, fritos, cake, cookies, doughnuts	0.8
Total	3.4

Table 8. Food groups eaten by 25 Mexican American preschool children during three days recorded

	Breakfast	Noon	Evening
Total meals reported	71	69	69
All four food groups	6	10	12
Three food groups	25	26	30
Two food groups	42	32	24
One food group	1	2	3

Table 9. Meal patterns eaten at meals by 25 Mexican American preschool children during three days recorded

	Breakfast	Noon	Evening
Total meals reported	71	69	69
All four food groups	6	10	12
Meat, Milk, Cereal	22	12	9
Milk, cereal	35	7	3
Meat, milk, vegetable	3	10	3
Milk, vegetable, cereal	0	3	5
Meat, vegetable, bread	0	1	13

Table 10. Cooking methods used for most foods by Mexican American families

	Families	
	N	%
Boiled or fried	5	24
Boiled	3	14
Fried	2	10
Fried or broiled	2	10
Fried or baked	2	10
Fried, broiled or baked	1	5
Boiled or baked	1	5
Broiled or baked	4	19
Boiled, fried, broiled, baked	1	5